

# Web-Technologien beim Studium der bildenden Kunst

## Web Technology for Learning Fine Arts

Elena Gaevsкая, Tatyana Laska  
Saint-Petersburg State University  
Tel:+7(812)2919608, Fax:+7(812)3237175  
E-mail: elena.gaevsкая@gmail.com, tatyanalaska@yandex.ru

### **Zusammenfassung:**

Der vorliegende Artikel widmet sich den Einsatzmöglichkeiten von Netzwerktechnologien bei der Ausbildung von Studenten an klassischen Universitäten. Die beschriebenen Forschungsarbeiten wurden an der Staatlichen Universität Sankt Petersburg im Rahmen des Projektes „Theoretische Aspekte und methodischer Rahmen für virtuelle Computerrekonstruktionen von Kulturgütern“ durchgeführt. Dieses Projekt umfasst komplexe Fragestellungen bei der Rekonstruktion herausragender Denkmäler alter Kunst – der Erlöserkirche auf Nereditsa und der Erlöserkirche in der Ilyin-Straße in Nowgorod. Innerhalb des Artikels weisen die Autoren auf eine Zusammenarbeit zwischen Studenten und Lehrkräften hin. Der Begriff Netz bezieht sich hierbei nicht nur auf das Internet, sondern auch auf eine Gruppe von Experten, die in realen und virtuellen Räumen zusammenarbeitet. Die Autoren untersuchen die Grundgedanken von Otto Peters, eines bekannten Theoretikers des Fernunterrichts, und stellen fest, dass sich eine Reihe seiner Thesen in der Praxis bewahrheitet haben, insbesondere die Herangehensweise zur Schaffung von Ressourcen für das Lernen.

### **Abstract**

This article shows the results of research of network technology opportunities for classical university students training. The research focused on in this article was carried out in the framework of St. Petersburg State University Project "Theoretical aspects and methodological basis for the creation of virtual computer reconstructions of historical and cultural values". The Project covers a set of issues related to reconstruction of the outstanding memorials of ancient art - the Saviour Church on Nereditsa and the Church of the Savior in Ilyin Street in Novgorod. Within the context of this article, the authors draw attention to collaboration of students and teachers in the project. The term Net refers here not only to the Internet but also to communities of experts who collaborate in physical and virtual spaces.

The authors consider the ideas of Otto Peters, a well-known theorist of distance learning, and assert that a number of his predictions have come true in practice, namely, the approaches to creation of resources for learning.

*Introduction.* The information revolution of the end of the 20th century had a major impact on lives of individuals and society. So it is natural that the humanities and social sciences are searching for explanations for innovations brought to reality by the information technology. Should we be surprised that we feel demand for a creation of 'pedagogy of the information society' more and more clearly. Among the creators of such field of knowledge are Walter Dick, Lou Carey, and James O. Carey, who developed the basis for instructional design for education; George Siemens and Stephen Downes, the authors of connectionist approaches to the solution of educational issues; Marc Prensky, who is the author of the term "digital natives" and developer of ideas of learning through games etc.

According to our point of view, the origins of the ideas of the above authors are to be found in the books of Marshall McLuhan, who notes that the development of information technology will produce a revolution in society, in general, and education, in particular, like the invention of printing; Jean Piaget and Lev Vygotskij, who laid the foundations of constructivist pedagogy; and Otto Peters who claimed that distance education develops similar to industrial process.

O. Peters evaluates his research as a "comparative interpretation" that precedes the creation of the theory, the researcher describes distance education as a product of the industrial age and a natural stage in the historical development of education.

In the researcher's view, in the pre-industrial period students studied in classroom, in industrial era there is distance learning, and in post-industrial age there is a network. In the end of the last century, scientists could not know anything about social networks, so the author did not use that term, but he gave a detailed description of it. He wrote about "a combination of intense and long lasting collaboration, sophisticated ways of obtaining information and increase in contacts between the participants of the educational process through telecommunications" [4, 87].

Among the pedagogical characteristics of distance education the scientist mentions the change of aims of education and also in attitude of the participants of the educational process, the dependence of the efficiency of the educational process on its planning and organization. The activities of teachers are much more formalized and he/she becomes a designer of resources, coordinator of teaching and consultant for autonomous students. Educational resources should be formalized, and the expected results from students should be standardized. Development of educational resources is part of the industrial process and requires a large number of specialists in different fields of knowledge, setting a common goal before them and coordination of their activities.

In this paper, we show that the ideas of the scientist have been confirmed by the practice in the following points: (1) development of network communication among participants of the educational process, (2) change of roles of teachers and students, (3) ways of the production of educational resources.

In this case resources were developed through the collaborative work of teachers and students of St. Petersburg State University and experts of the Russian State Museum and the Novgorod State Museum on the restoration of the monuments of old Russian Art. Therefore, the paper includes two aspects: Art History and Pedagogy.

*Aspects of Art History. Ethical and aesthetic aspects in analogue reconstruction of the lost culture and art objects.* In the modern world culture objects are not just a fundamental part of the national state property but they also regarded as an integral constituent of the global worldwide heritage. The investigation and transmission of these objects are inevitably connected with the problem of their integrity. That is why along with the discussion (so widespread in the world practice) about preservation and restoration of the monuments the methods of virtual preservation and reconstruction. Old Russian artistic heritage provokes major interest both in Russia and abroad. The whole world acknowledges achievements of the Russian school of restoration after reconstruction of the monuments ruined during the World War 2. Still there are some problems left that cannot be solved by means of traditional restoration. Many objects may not be fully reconstructed in their historical form and the extent of reconstruction doesn't let even a professional create the whole idea of the monument. Methods of the virtual reconstruction provide a unique possibility to complete the lost fragments and to create the whole image without damaging the monument itself.

The main principle of virtual reconstruction is create a model that is as close as possible to its historical descriptions, data from archives, authentic depictions and other documents. However scholars have to face several difficult problems of ethics and aesthetics while they are working with documents, since the evidence they get from archives are often contradictory and almost always incomplete. Creators of the model may leave it uncompleted and to content just with reconstruction of those elements that can be found in archives. There also is another way to continue working using prototypes and analogs of the monument. It requires a more flexible approach to the sources. While creating the analog model the choice of the lost fragment depends on several possible variants of reconstruction and each of them will equally correspond to various historical analogues. So the analog model is a result of both historical research and ethical and aesthetic choice of its creator. There is no doubt that this choice requires scientific ground of this choice. These and other questions are inevitable in the process of works on the reconstruction.

*Recreation of the original ensemble of monumental painting in Saviour Church on Nereditsa in Veliky Novgorod.* The Saviour Church on the Nereditsa hill next to Novgorod is one of the most renown monuments of Old Russian culture. The church was built in 1198, its interior is decorated with frescos in 1199. The building that was built in typical Novgorod style and its unique frescos of the highest artistic quality and fine integrity were destroyed by gunnery in 1941. The building was reconstructed by 1958 and in fact it is an architectural model of the ruined monument. There in not more than 15<sup>th</sup> of 12<sup>th</sup> century painting left on the walls. Thousands fresco fragments were found during the restoration and archeological excavations. Now they are kept in museums. It is not possible to reconstruct these fresco paintings using the methods of traditional restoration. The only approach to the solution are modern computer technologies which would enable to create a complex virtual reconstruction of the paintings in the church.

Modern technologies of computer graphics, artistic model simulation and creation of virtual reality make possible to reconstruct very closely (both from the scientific and artistic points of view) ruined (entirely or partly) objects of culture. The reconstruction of the image of the Saviour Church on the Nereditsa will be based on multiple documentary photos we still have at our disposal, fresco copies, arts critics descriptions and modern technologies.

Unlike the widespread practice of relative approaching the documents this project is focused on maximum approaching the original appearance of the monument, documentary fixation of all steps so the results can be used in the further restoration of the monument.

Despite the high value and importance of Old Russian wall paintings the frescos are not so much shown in museums. The results of reconstruction may help to overcome this drawback in to represent the monument of Old Russian art within the world information field. Experience of this project might be applied to other ruined objects of Old Russian art and architecture.

The subject of the project and its methodological approach correspond to the basic activities within the European program of digital preservation of cultural heritage. The project of reconstruction of paintings of the Church of the Savior on Nereditsa and Savior on Ilyina street in Veliky Novgorod were initiated three years ago.

*Change of Roles of Teachers and Students.* In this regard, characteristics of learning of 'digital natives' and 'digital immigrants' by Dr. M. Prensky [8] seems to the author quite realistic. The former receive information really fast, like parallel and multi-task processes, they prefer graphics to text, random access, games to 'serious' work, function best when networked, they are aimed at getting instant results and frequent rewards. The latter learn slowly, step by step, individually, seriously.

The weakest points of the 'natives' are dependence on rapid results and frequent rewards. Also, fast receiving of information does not warrant its accumulation, assimilation and transformation to knowledge. On the contrary, we often find that students forget it as quickly as acquire.

There is a need of a set of approaches that will teach students to use the Internet as a tool of interaction in professional communities (groups of practices [1,9], a network of experts. [4]). Our experience shows that an important method is to involve students in the creation and development of Internet resources. Students of St. Petersburg State University are involved in creation of the resources on the history of Old Russian culture - a set of materials on architecture, art, history, restoration of ancient Novgorod church of the Transfiguration of the Savior on Nereditsa [5,6,7].

*Ways of the production of educational resources.* The use of electronic resources is becoming increasingly popular in the practice of higher education. In this regard, there are a number of issues. There are at least two approaches to the organization of training activities on the basis of electronic resources. The first is based on the active role of developers, who not only form the content of the resource, but also design a structure of the resource which allow using it in training activities.

The key idea of the second approach is that the students are designers of their learning environments. The role of the teacher is to provide them with the opportunity to design their virtual learning spaces and recommend necessary materials on how to assess the validity of such materials.

The first approach is based on the concept of pedagogical design, and the second one is associated with ideas of connectivism and largely reflects the current trends of the Internet development. Both approaches are used in the design of educational resources. Therefore, to study the outstanding monument of ancient art - the Church of Our Saviour Transfiguration on Nereditsa - two types of resources were created - a virtual repository "Nereditsa – the Link of Times" and Multimedia Information System "Architecture and Murals Novgorod church of the Transfiguration of the Savior on Nereditsa".

Our experience shows that students do not always cope with the task of finding reliable material on a given topic. From our point of view, solution to this problem is training of future professionals to find accurate information on the Web. This requires solving at least two tasks: (1) to provide students with a system of criteria for the selection of trustworthy information and (2) to create a model of depository of resources from which this information can be extracted.

The method of forming "personalized classroom" includes the following steps: (1) the study of criteria for evaluating the reliability of the information, (2) selection of information from the depository based on the criteria presented by the teacher, (3) selection of information from the resources on the Internet based on the criteria.

As a tool to carry out testing of this technique, we use the resources developed under the project "Theoretical aspects and methodological framework for creating virtual computer reconstructions of monuments of historical and cultural treasure" - an educational repository "Nereditsa – the Link of Times".

Since we are working on a project for many years, the Repository can be viewed as an educational resource for "two generations". Learning management system of the Repository is SAKAI, which allows you to organize the wide range of educational services, including the publication of educational materials in various formats, to test and evaluate students' knowledge, and organize the exchange of information between the actors of the educational process.

The content of the resource includes video, audio and multimedia, educational texts and references. The available material is structured in the following sections: Classes, Resources, Learning Tasks, Tests, Bibliography.

In the context of learning in a common virtual classroom Classes section is the main part of the Repository. It includes 46 training modules based on abstracts of the lectures by an outstanding specialist in ancient art, V.A. Bulkin. After reviewing the abstracts a student gets the task(s), to fulfill which it is necessary to use materials of Resources and Bibliography sections.

As part of connectivism approaches Resources section becomes the heading element which is being developed by us as depository and contains materials on the history, reconstruction and restoration of the Church of Our Saviour Transfiguration on Nereditsa (Novgorod). In this case method of teaching is case study, the research is associated with the need to find credible scientific data. For the material selection students use criteria to evaluate sites, Resources section content, the sites of museums, and conferences.

*Development of network communication among participants of the educational process.* Serious potential for the development of 'skills of networking' in the expert network is interaction with specialists. In this direction we use the enormous potential of the project "Russian Museum: Virtual Branch" [10]. Using the library project, meetings with experts, work on the portal allow the students to create a responsible attitude to work in the Network as an important part of the development of ethical and professional approaches to work on the Internet.

"The Russian Museum: Virtual Branch" is a large-scale international project that embodies the idea of access to the world's largest collection of Russian art. Among the participants of the project there are universities, cultural institutions and institutions of further education, Russian culture centers in cities of North-West and Central Russia, Siberia, the Urals and the Far East, as well as in Finland, Greece, Slovenia, China, India, Ukraine, Lithuania, Kazakhstan and other countries. The project is an international network of 91 organizations in 10 countries.

The project implements educational goals: involving a wider audience in sharing the values of Russian culture, the historical past of Russia, through free access to digital materials (computer programs on the history of Russian art, video, and electronic catalogs of major exhibitions), as well as formation of a single cultural and information space for the project participants.

St. Petersburg State University is one of the partners in the project. "Russia's oldest university" founded in 1724, St. Petersburg State University has deserved the right to be called one of the best universities in Russia: a rich historical past, current broad research activity, active development and innovation put SPSU at the forefront of Russian science. [14] It is obvious that the cooperation of such organizations as St. Petersburg State University and the State Russian Museum opens perspectives for the development of a web community project as a whole.

"The Russian Museum: Virtual Branch" is not only the public access to artistic and scientific potential of the world's largest museum of Russian art, but also the possibility of fruitful cooperation on the basis of joint educational and research projects. Two major areas are developed on the basis of the project in St. Petersburg State University: student learning and collaboration of experts in the arts and humanities.

Computer programs on the history of Russian art, videos and electronic catalogs of the largest exhibitions offered by the Russian Museum to virtual branches, can most fully and vividly present to students the artistic culture of Russia. In addition to the preservation of the Russian cultural and historical traditions, the project allows creating a multicultural environment involving partners from other countries and cultures.

One of the main requirements of the modern university education is that the students are involved in research work at the earliest stages of learning. Students have possibilities to meet experts of the Russian Museum, collaborate on degree projects.

It is impossible to imagine a modern university without active research work and international cooperation. Among the projects of this kind we would like to mention the conferences held in partnership with our organizations: International Workshop on Sustainable Development of Museums (2007), Development of Information Technology at the Museum (2008) and the All-Russian Conference "Restoration and Reconstruction of the Monuments of Old Russian Culture" (2011).

*Conclusion.* In conclusion, it should be noted that the changing roles of participants of educational process is the key point in Internet education. Through an example of a virtual repository of learning resources "Nereditsa - the Link of Times" we can see that the teachers and the students act as co-workers who develop resources in a joint project and then use them in learning activities.

Cooperation within the framework of the project "The Russian Museum: Virtual Branch" shows the learning process as an interaction of the students with the ever-changing information environment including not only digital resources, but also the experts who create and develop them. It is a very important experience for "digital natives".

Thus, at the very early stages of their professional activity, future experts are involved in the activities of community of professionals and have the opportunity to grasp a high level of responsibility and creativity inherent in the activities of such teams.

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